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'Science Chicks' rule ... and burn and melt and dissect and analyze

Programs, teachers draw girls into science and math

May 17, 2005

By KATHERINE CROMER Fort Worth (Texas) Star-Telegram

Pat Linford never thought she might be part of the problem. But as she watched a video of a master science teacher leading his students in a lab experiment, veteran science teacher Linford was stunned.

When the girls asked questions, he gave them the answers and even did parts of the experiment for them.

When the boys asked questions, he pushed them with his own questions: "Why do you say that?" and "What does that mean?"

What Linford and 15 other teachers enrolled in the University of Texas at Arlington's Metroplex Area Gender Equity Institute saw was too familiar.

Were they, as teachers, contributing to the high number of girls rejecting classes — and eventual careers — in math and science?

"We all said, 'Oh, I've seen myself doing that,' " recalled Linford, who teaches seventh-graders at Heritage Middle School in the Grapevine-Colleyville school district in North Central Texas.

Undoing such cultural habits and increasing the number of girls preparing for careers in math and science was the goal of the institute, a program developed by UT-Arlington and financed with a \$12,000 grant from Dallas-based Texas Instruments and the Dallas Women's Foundation.

"More and more jobs have a technical aspect to them," said Tegwin Pulley, vice president of work-force development for Texas Instruments. "If you just depend on the traditional pool — mainly white males going into engineering — that is not enough of a supply to maintain our leadership in the tech industry."

Researchers say that if girls lose interest in math and science in middle school, when social pressures and gender differences become more pronounced, they typically won't find their way back to the subjects.

At the Gender Equity Institute, teachers met a half-dozen times, typically on weekends. They discussed the history and culture of women in science, strategies for gender equity in the classroom and appropriate reference materials and


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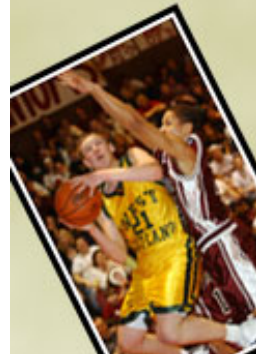
Student Sally Ok, 12, heats an unidentified powder (below) during a lab. In the all-girl class, most members wear pink T-shirts emblazoned with the words "Science Chicks."

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technology to use when working with girls.

The first institute ended in February, and its director has moved, leaving the program's future uncertain. Pulley said Women of Texas Instruments, a company association, understands the program's importance and would like to see it continue.

"The issue here is that teachers have very good intentions with their students," Pulley said. "This is just an opportunity to learn techniques and approaches that help girls stay more interested."

The reasons middle school girls tend to shy away from math and science vary, but they often reflect how cultural expectations of girls are different from those of boys.

Linford uses the example of young children playing in a park.

"Little boys fall down and parents say, 'Brush yourself off; you're fine.' But the little girls, they hold them and fuss over them."

Middle school boys tend to be more aggressive, particularly when there are hands-on activities. The boys take charge, and the girls often end up taking notes and cleaning up.

When Linford was recently honored at her school, a male student told her she was like the skeleton, supporting the school. A female student said, no, she was like the heart.

"They said the same thing," Linford said. "But it's also very, very different."

Being mindful of those differences, researchers say, can help keep girls on track.

"I am very aware of how I respond to the boys and the girls so that I don't make my response gender-biased," Linford said.

After Linford and colleague Karen Giesler began attending the Gender Equity Institute, they hatched the idea for Science Chicks, an after-school club with about 22 members, all seventh-grade girls at Heritage Middle School.

Club members Annie Kleinschmidt, Sally Ok and Jillian Harty sat on stools around a lab table on a recent afternoon. They pulled plastic safety goggles over their faces, with the tight straps making their hair stick up over their ears.

They dumped eyedroppers filled with water, vinegar and iodine on little piles of baby powder, baking powder and baking soda. Then they lit a candle and tested how the substances reacted to heat.

"It's melting!" Kleinschmidt said in her best Wicked Witch of the West voice.

"Guys usually take over the projects we do, and this is the only time we get control," Harty said. "Any time you deal with fire or anything, they snatch it away from you."

Ok poked at a burnt pile of baking soda with a toothpick. "It's like when they don't give you a ball in dodgeball."

Giesler said the girls are more "liberated" in the all-girls setting. In class, they don't ask or answer a lot of questions. But after school, it's a different story.

As faculty sponsor of the math club at Texas' Haltom High School, led by a slate of female officers, Kenita Weldon sees what she believes may be the future of women in technical fields. In one of Weldon's two calculus classes, there are six girls and eight boys. In the other, there are 16 girls and 11 boys.

"When I was in high school, I was the only girl in my calculus class," said Weldon, who has taught for 24 years at Haltom High. "In my classes now, it's about 50-50. A lot of it depends on how much their parents allow or encourage them to do."

Senior Tha Rajasombat is vice president of Haltom's math club. She's also the president of the school's science club.

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"It did start for me in the middle school," she said. "The teachers thought that I was good in math, so they pushed me to the honors classes."

Rajasombat considered becoming a pharmacist and works counting out pills and filling prescriptions at a local pharmacy. She acknowledges that her parents have played a big part in keeping her motivated.

"My father wants me to be an M.D. He pushes me to go higher," said Rajasombat, who plans to major in international business at Texas Christian University in Fort Worth.

Young women like Rajasombat motivate researchers and educators to keep trying to close the gender gap.

For the first time, there was parity in enrollment this year at the Texas Academy of Math and Science, a residential program for high-schoolers at the University of North Texas in Denton. Half the 378 academy students are female, said Dean Richard Sinclair. There are more applications coming in from young women than men, he said.

"We've really made an effort to recruit young women," Sinclair said. "We had to actually reconfigure the dormitory."

Sinclair said the girls who attend the academy, which was created in 1987, prefer the university environment to studying math or science at a public high school.

"Here, everybody's smart," he said. "There's no stigma attached to being smart or liking science and math. They can explore science and engineering without any problems."

And the young women at the academy excel.

The girls are often more focused and make higher grades than the boys, who have more discipline problems, Sinclair said. The presidents of most of the clubs and the class leadership tend to be female. About 88 percent of the school's graduates major in math, science or engineering. Some go into business administration or education.

Women who did not take advanced math and science in high school rarely choose a technical major in college, experts say.

Cathy Banks, director of the Science and Mathematics Center for Women at Texas Woman's University in Denton, is among those dedicated to increasing the numbers of girls taking math and science classes.

"In order to do that, you've got to get them interested in middle school and keep them in high school," she said.

Banks has seen improvement, she said, in part because of the center's programs and camps that steer girls into the technical fields. But the gender gap in some advanced subjects may never close, she said.

"It's an undertone from everywhere, from the counselors, the parents, the teachers. 'Do you really want to be a doctor? Girls are supposed to be nurses,' " Banks said. "It's just there."

Such attitudes are detrimental not only to young women but also to the economy and the business world as a whole, she said.

"There are some really talented girls out there, but they are not being encouraged," Banks said. "You're missing out on a whole pool of people that could do a wonderful job."

Pulley of Texas Instruments cringes at the thought of a work force without significant numbers of women in technical fields such as engineering.

At Texas Instruments, which has been listed on Working Mother's 100 Best Companies list, women make up only 20 percent of the company's engineers. That ratio mirrors the trend at the nation's universities — only 20 percent of engineering

degrees are conferred to women.

"Engineering is a great opportunity for women to use their creativity and innovation and be in a field where they can develop products that make the world a better place, and be in a field that traditionally pays high wages," Pulley said. "That's good for TI, but also for the community and economy in general."

Another field that does not attract many women is computer science. In fact, Pulley said, women are leaving the field. In the late 1980s, 30 percent of those pursuing computer science degrees were women. That number has dropped to 20 percent.

"It was one of those degrees that women went into early on because it was new," Pulley said.

At Heritage Middle School, the Science Chicks club will be expanded next year to include eighth-graders. Giesler said she is crossing her fingers and hoping that some of her students will stick with the field.

"We're hoping to start chopping away at the big rock that's in the way," Giesler said. "We're not women's libbers; that's not me. But I'm for everyone achieving the best they can."



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